

CrushGrind SHAFT: Mill boring and profiling instructions

1. Boring the housing

- Bore a 1 3/4" (45 mm) to 2" (50 mm) hole 1" (26 mm) into the blank.
- Bore a 1 9/16" (39 mm) hole 1 1/2" (39 mm) further into the blank.
- Bore a 1 1/16" (see note below) (26 mm) hole as deep as is necessary to completely penetrate the housing.



Mill blank

50mm bore

39mm bore

2. The housing profile

- Turn whatever housing profile is pleasing to you or your customer's eye.
- Finish sand the profile to the desired grit.
- Part-off the housing from the blank.



Housing profile

Housing part-off

3. Boring the stopper

- Bore a 15/16" (23 mm) hole 1 1/4" (32 mm) into the remaining blank for the stopper insert.
- You might want to face-off the blank prior to boring the stopper.



Stopper blank

Stopper bore

4. Profiling the stopper.

- Turn a profile that compliments the housing.
- This should automatically part-off the stopper.



Stopper profile

5. Make a "Jam Chuck"

- With what is left of the blank, create a tapered jam chuck.
- The taper should create a snug fit for the stopper.
- Re-mount the stopper to the jam chuck to finish the profile for the top of the stopper.
- Finish sand the stopper to the desired grit.



Jam chuck blank

Jam chuck profile

Stopper re-mounted

6. Congratulations!

You have completed the boring and profiling of your mill. Now you can move on to whatever finishing process you prefer.



This is a design I call "The Queen"

* Advanced turners can skip the part-off of the housing step. Just continue the initial bore to account for the width of your part-off tool and the depth of the stopper bore. Turn the entire mill profile and then part-off the housing and stopper (requires a high level of confidence and skill in the accuracy and depth of the boring process).

* Use of fractional bits may require slight modification of the mechanisms. The mechanisms will also need to be glued in. I recommend a 5 minute epoxy. For oily wood, pre-treat the area to be glued with acetone and let dry prior to applying any glue.

* At 1 1/16", the stopper will have a slight amount of play when fitted to the housing. To avoid this, bore a 1" through hole and then turn down the outside diameter of the stopper insert for a perfect fit.

* IF YOU PLAN TO GLUE-IN THE MECHANISM, THE "CLIP-IN" NOTCHES DO NOT NEED TO BE CUT.